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AUTHOR Calhoun, Dave
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ABSTRACT

Systemic reform of mathematics and science education in K-12 schools, sponsored by the National Science Foundation (NSF), was instituted in 1991. Built into the initiatives were guidelines for local (internal) evaluation of programs. This paper is a summary of the evaluation conceptualizations and efforts of one evaluator at the Fresno Unified School District. The evaluator created a model for internal evaluation by combining driving elements identified by NSF with process action stages developed by the Fresno program to create evaluative views. The model also incorporated Stufflebeam's conceptualization of evaluations for decision-making: context, input, process, and production. The model grew into an embedded-research approach that includes understanding, describing, and recommending from within the district. It also led to the evaluator offering input into the decision-making process and to the following key learnings: (1) Evaluation design and tools must be flexible and include triangulation, quantitative and qualitative methods, and multiple units of analysis; (2) instruments can be better developed when evaluators understand the complexities of decision-making; (3) evaluations should include close inspections of individual program components as well as a means to describe how the program as a whole is developing. (WFA)

Fresno Unified School District
Dr. Santiago V. Wood, Superintendent

Evaluating a Systemic Reform Project at the School District Level

INTERIM REPORT FOR THE FRESNO SYSTEMIC PROGRAM
REAFSP0102-3

Dave Calhoun
Analyst, Office of Research Evaluation & Assessment
Fresno Unified School District

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Evaluating a Systemic Reform Project at the School District Level

National Science Foundation-sponsored systemic reform of mathematics and science education in K-12 schools has recently celebrated its 10^{th} birthday, having been officially "born" with the Statewide Systemic Initiatives (SSI) in 1991. NSF's systemic reform focus has shifted targets through the 90's, including the provision of funding for school districts in urban and rural areas, and more recently on the interactive partnerships of schools with institutes of higher education. The study of the efficacy of these systemic reform initiatives has occurred at the national level with program evaluations and at the local level, with each participating project. NSF's guidelines for evaluation essentially allow for many different orientations to conducting evaluation, provided solid research principles are at work (Suter and Frechtling, 1998)

At the national level, program evaluation efforts such as the one the COSMOS Corporation is engaged in are able to see the picture of systemic reform as a patchwork quilt of separate projects, albeit each with common themes and characteristics. At the local level, the evaluators can view the reform project as an effort to weave a complex *tapestry* of system-wide and system-deep high quality mathematics/science achievement for kids. At the root of the task is the need to view efforts as they occur in a system, with each component linked to and affecting several other parts of the system. What follows here is a summary of the evaluation conceptualizations and efforts of one local evaluator.

The initial evaluation model in Fresno for the NSF-funded Fresno Systemic Program (FSP) in mathematics and science took advantage of Stufflebeam's (Stufflebeam, Foley, Gephart, Guba, Hammond, Merriman, and Provus, 1971) conceptualization of four evaluations for decision-making: Context, Input, Process and Product (CIPP) evaluations. The FSP evaluation team provided inquiry-activities in these four areas to the FSP leadership both as a description of the project status and as an aid for making decisions. The emphasis on description has remained, as the evaluation methodology has evolved to emphasize descriptive theory via an embedded research approach. The fundamental premise of the embedded research view is the immersion of the researcher into the system, working with the project to understand and describe what is actually happening.

How does one evaluate the presence and progress of systemic reform in the NSF-funded mathematics and science education projects? Returning to the tapestry metaphor, evaluating a project's efforts involves four important elements: a) examining closely particular sections of a thread in the tapestry, b) examining the picture produced by the thread as it weaves along, c) influencing the tapestry's design with formative information, and d) viewing the picture being woven across the entire tapestry. All four evaluation elements involve shifting one's view of the system; part of the evaluator's task then is to develop an ability to move from view to view. As one noted researcher of systemic reform in mathematics and science education has noted, "Evaluating systemic reform requires both the capacity of focusing on very detailed student and teacher information and pulling back to elucidate equally a global view of individual schools, districts, and the whole system," (Webb, 1999, p. 3). At every level, the evaluator endeavors to describe what has happened to bring the system to this place, what is happening now, and what may be, given the extension of current variables.

Blueprint for Local Evaluation in Fresno: Horizontal and Vertical Threads in the Loom

Fresno Unified School District (student population ~ 79,000) has been engaged in an NSF-funded mathematics/science systemic reform effort since 1995-96. The Urban Systemic Initiative (USI) and the second cycle of award funding (the Urban Systemic Program-USP), have afforded the opportunity for stakeholders to impact student achievement through a variety of systemic activities. The NSF has identified some of these driving elements of reform, which include:

- High quality, standards-based curriculum
- Hands-on, inquiry-based instructional strategies
- Assessment
- Professional development for teachers and building administrators
- Support for students in rigorous coursework
- Access to rigorous coursework- opportunity to learn
- Resource development capacity
- Partnerships with universities and other community stakeholders

These drivers represent essential areas for projects to address as they engage in impacting the system, and are evident across most USIs with NSF award funding (Kim, Crasco, Smith, Johnson, Karantonis, and Leavitt, 2001). These elements can be considered to comprise our current theory of the content needed for change in the FSP. In tapestry language, these are the vertical threads in the loom.

Threaded horizontally through the driving elements are process action stages. While the process may differ for some of the elements, generally each driving element must weave its way through these stages of action. These stages also constitute the current theory of the process of change as the FSP is conceptualized.

- Fit with the systemic reform vision
- Local policy-level decisions
- Availability and targeting of resources
- Strategic planning/decisions
- Implementation
- Impact
- Reflection/Feedback to the system

These interwoven strands also offer a blueprint for evaluation, and the presence and impact of a systemic reform effort can be investigated, so long as one keeps in mind the four evaluative views: a) close examination of a portion of a thread- a driving element, b) looking at the whole picture of the driving element, c) joining in the creation process with formative information, and d) stepping back to view the entire picture and its interactions. Figure 1 offers an illustration of the systemic reform metaphor. An example of efforts in Fresno to address each of these views is then presented.

Figure 1: Tapestry of Systemic Reform

Driving Elements: / **Process/Action Stages:**	**Curriculum**	**Instructional Strategies**	**Assessment**	**Professional Development**	**Opportunity To Learn/ Access to Rigorous Content**	**Resource Capacity**	**Partnerships**
Vision							
Policy							
Resources							
Strategic Planning							
Implementation							
Impact							
Reflection/ feedback							

Close Examination of One thread: Professional Development from Implementation to Impact

The Fresno evaluation team hypothesized that following a single thread could yield identifiable impact data; namely that extensive professional development improves the quality of instruction, resulting in greater student achievement. Each element in the flow chart creates difficulties in operationalization; nevertheless, we hypothesized that data can be collected to examine this sequence.

Professional Development → **Quality Instruction** → **Student Achievement**

Given the hypothesis above, and the limiting factors encountered by the availability of research resources, three researchable questions emerged:

- What connections between the quantity of professional development and the quality of instruction can be drawn?
- What is the correlation between quality instruction and student achievement?
- What relationship exists between the quantity of professional development garnered by teachers and the subsequent achievement of students on available assessments?

Sign-in information from the many professional development offerings were entered into a database and used as a measure of the amount of inservice time collected by teachers in the system. The quality of instruction could not be measured in any substantial manner; however, ratings of individual lessons by trained observers using the Horizon Research Classroom Observation Protocol provided a proxy for instructional quality. Student achievement was measured using the Stanford Achievement Test, 9th Edition (SAT-9), and the Assessments of Baseline Curriculum Standards (ABCs), developed in conjunction with the Northwest Evaluation Association.

What connections between the quantity of professional development and the quality of instruction can be drawn?

Pearson Correlations were computed between the total 1995-2000 professional development hours collected in mathematics or science and the instructional quality ratings given to 58 mathematics classrooms between 1998 and 2000. Results indicated no apparent relationship ($r = -.127$, $n = 58$, $p = .343$). Several possible explanations for the results have occurred, among them:

- There is no relationship between quantity of professional development and quality of instruction. Perhaps data collected on teacher perceived impact of the professional development received would relate better to instructional quality.
- Some other factor (teacher experience?) is related to professional development quantity and instructional quality in a more complex relationship (e.g.- experienced teachers need less professional development in order to create quality instruction than do inexperienced teachers.
- A relationship exists, but the weakness of the classroom observation instrument in assigning a valid year-long rating to instructional quality masks the correlation.

What is the correlation between quality instruction and student achievement?

Given that some instructional experiences have been rated highly and others low by observers, we next investigated the link between instructional quality and student achievement in mathematics. Because not all observed classrooms fell into the Grade 3-6 range for which two years of test data were available, the number of classrooms included in this portion of the study was reduced to 24. Means were initially computed for two dependent variables, the ABC pre-post growth score, and the SAT-9 NCE gain score. Instructional lessons were categorized into three levels, Ineffective Instruction, Adequate Instruction and Effective Instruction. Table 1 summarizes the results.

Table 1
Fresno USD Mean ABC and SAT-9 Gains by Classroom Observation Rating

Instructional Quality Rating	ABC Growth Mean	SAT-9 NCE Gain
Ineffective Instruction	7.88 ($n = 120$)	0.40 ($n = 187$)
Adequate Instruction	8.12 ($n = 101$)	4.95 ($n = 129$)
Effective Instruction	8.61 ($n = 178$)	5.37 ($n = 209$)

Initial inspection of the data indicated that as the instructional quality rating ascribed to a classroom lesson rose, so did the overall gain scores of students in those classrooms. Univariate Analysis of Covariance was performed on the SAT-9 data next, including a socio-economic status (SES) indicator (student free-reduced lunch) and using prior year SAT-9 as the covariate. The mathematics instructional quality rating remained a significant factor in the model ($f = 3.399$, $p = .034$, $r^2 = .211$).

As with the previous research question, the findings are open to interpretation:

- There is a link between the observer's ratings of a classroom lesson and overall growth in achievement.
- The relationship evidenced is not causal. An alternate hypothesis is that classrooms receiving higher ratings were populated by students who were prepared and eager to learn, making the task of quality instruction easier and achievement a logical outcome.

The small number of students with pre- and post- test scores who were in classrooms of an observed teacher calls to question the findings.

What relationship exists between the quantity of professional development garnered by teachers and the subsequent achievement of students on available assessments?

While the influence of the quantity of professional development on quality instruction was not established and the link between instructional quality ratings and student growth open to alternative explanations, the third question posed by the evaluation team attempted to bypass classroom observations to draw a direct connection between professional development and outcomes. Raw and adjusted means are presented in Table 2:

Table 2
Fresno USD Mean NCE 2000 SAT-9 Scores for Grades 3-6 by Mathematics Professional Development Hours Category 1995-2000

Professional Development Category	Mean SAT-9 NCE	N=	Mean SAT-9 Adjusted (Fall '99 ABC pre-score)	N=
0 to 29 Hours	40.5	3,986	46.0	2,095
30 to 59 Hours	43.7	9,740	48.1	5,259
60 to 89 Hours	46.1	6,224	49.4	3,230
90+ Hours	47.5	4,848	50.2	2,831

Note: Mean differences are significant at $f = 33.875$, $p < .001$, $R^2 = .427$

The differences are statistically significant when evaluated with a prior test score as the covariate. An initial alternative interpretation is raised with respect to the professional development hours categorization. Several hundred new elementary teachers have entered the district since the beginning of the FSI in 1995. Many new teachers have not had the opportunity to gather the same quantity of professional development as more experienced teachers. Differences in the means described above may be due to a "teacher experience" factor, by which experienced teachers are able to increase student achievement more than new teachers, making the professional development quantity variable incidental. In order to study this, all teachers with less than 5 years of experience were removed from the data set, and means and Analysis of

Covariance run again. Statistically significant differences in the means remained (f = 15.406, $p < .001$, $r^2 = .446$), thus eliminating the "teacher experience" explanation.

A linear regression analysis was conducted in order to determine the power of teacher professional development quantity as a predictive variable. Included as factors in the regression were SES, fall pre-score in mathematics, and category of mathematics professional development hours. The resulting equation was predictive of the SAT-9 mathematics score, accounting for 67% of the variance.

Table 3
Linear Regression on Fresno USD Grade 3-6 SAT-9 Mathematics NCEs with SES, Mathematics Pre-scores and Professional Development Quantity Category as Factors

	Unstandardized Coefficients		**Standardized Coefficients**		
Model	**B**	**Standard Error**	**Beta**	**t**	**Significant**
Constant	-115.27	1.678		-68.687	.000
Math pre-score	.800	.009	.619	93.979	.000
Prof. Dev. Quan.	1.165	.134	.056	8.687	.000
SES	2.190	.105	.138	20.921	.000

While the model was predictive of mathematics scores on the SAT-9 and the contribution of the professional development quantity significant, its contribution to the model was not large.

From Vision to Reflection/Feedback: The Elementary Mathematics Professional Development Subsystem

While the study of the specific effect of mathematics professional development quantity has yielded some interesting findings, telescoping out to view this portion of the tapestry shows a picture that is full of ambiguities. Evaluation tools that have provided the lenses to view this have included: document analysis, formal and informal interviews with project staff, surveys of the teaching force, session observations and participant post-inservice evaluations.

Vision

The vision for elementary mathematics professional development was originally established by specifying the quantity and types of inservice that teachers would receive. The initial 1995 grant proposal stated that all teachers would receive 20 days, or 120 hours of professional development in mathematics and science over a five-year period. The vision also referenced the need for content and pedagogical professional development for teachers. The vision has evolved since the beginning of the project. Inspection of the strategic plan beginning in 1998-99 indicates a new emphasis on providing differentiated professional development opportunities for teachers to choose from as needed. The 2000-05 USP award proposal further develops the notion of differentiated professional development according to teacher need, and introduces structures for reflection on teacher needs.

Policy-related inputs from within and without the FUSD

Initial policy called for a mandatory five days each year for elementary teachers to receive mathematics/science professional development. While implemented through 1997-98, policies and practices began to shift during year four of the project. Document analyses, interviews, and participation/observation at administrative meetings have provided the sources for the inputs that have affected the professional development system, and are here bulleted:

- FUSD Policy/Practice decision beginning 1999: no more substitute pull-out days
- Mandatory mathematics professional development eliminated after 1997-98
- Reduction of California-funded professional development days from eight (the FSP originally mandated five of these to be spent on mathematics and science professional development) to three in 2000-01.
- Change from USI to USP and completion of the Local Systemic Change grant has reduced FSP funds from about $4 million annually to $1 million. Other State grants have increased this in mathematics, but changes in Eisenhower funding and the FUSD budget cuts may mean further reductions as well.
- Assessment and Accountability initiatives from the State of California have increased the anxiety of district/school leadership and teachers to increase test scores, which may reinforce the belief that a strict focus on skill acquisition is the best way to teach.
- The California Academic Performance Index (API) and the low reading scores in the district have raised literacy as a monolithic issue, with the possible result that many schools and teachers are focusing on this and minimizing time spent for other subjects.
- A new District-originated "API Alliance" has as a goal the examination and selection of a specific tested skill to focus on, with the task of identifying the foundation skills needed in order to move students from their current ability to the standard.
- California Content Standards have been established, with specific grade level requisite skills.
- K-12th mathematics adoptions have been undertaken, with committees selecting from State-approved lists of texts that align with the standards.
- Many District-operated professional development initiatives operating independently.

Evaluator interviews with project coordinators offer input on the professional development system, it's impact and its sustainability over the course of the next few years.

- Project Director—
  - We are being affected by a politically driven shift back toward basic skills, and away from systemic reform efforts. Big question: How do we address sustained efforts at improving mathematics education when the vision for this is being constantly buffeted by shifting political winds?

- Mathematics Coordinator—
    - Sustainability of the FSP efforts will require that FUSD site leadership become/continue to be accountable to teaching for every child. The resources and the 'clout' that the FSP may have will always be changing—but the principal will remain the leader at the site.

These policies and practices have functioned to strengthen the threads of the professional development subsystem in some ways, but to fray them in many other ways.

Resource Availability and Allocation

Inspection of the award amounts across the last several years, along with District general fund monies and other grants, reveals that relatively less resources are being allocated to mathematics professional development in 2000-1 than in previous years. Commitments from the general fund have remained stable, but target only salaries for the mathematics coordinator and office support. Teachers on Special Assignment (TSAs) who provide the bulk of the professional development, have been funded from grant awards. The District general fund has been unable to support the quantity of professional development evident in the early years of the project. Some grants from the State have help to continue inservice support. An interview with the mathematics coordinator provided these statements: .

- A major professional development funder now is the State, with Assembly Bills 1331, 2442 and 496 grants. These target special populations of teachers for specific professional development.
- New adopted state-recommended curricula meet rigorous content expectations, but it is more difficult use conceptually-based pedagogical strategies with it.

Strategic Planning/Decisions

Mathematics professional development calendars have been built each spring for the following year based on the available funding and the policy changes affecting teacher flexibility to attend. As stated earlier, the recent decision to eliminate substitute-based full-release inservices has forced the mathematics office to shift the format to afternoon and weekend experiences. The FSP staff have increased opportunities for teachers to gain content knowledge, assist in curriculum implementation and provide lesson design activities through the API Alliance, creating differentiated opportunities. However, the number of teachers participating has lessened. This has brought to the FSP's attention a gap in the mathematics professional development implementation: many schools and teachers are not developing needs-based professional development plans to take advantage of the breadth of offerings. In a 2000-01 teacher survey, only 17% of teachers reported being involved in planning their mathematics-related professional development, and only 23% reported being encouraged to develop an individual plan. These numbers represent very little change from the 1998-99 survey.

Implementation

The number of workshops offered and the number of attending teachers has dropped off since the highest participation year of 1997-98. A total of 521 elementary teachers attended workshops (some attended multiple workshops) in mathematics and science in 2000-01. The 1997-98 school year saw 2,265 teachers receiving professional development hours.

Post-inservice participant evaluation forms provide information about the degree of relevancy and overall quality of mathematics inservices as seen by participants. Most participants at workshops in 2000-01 (and indeed since 1996) have rated the sessions highly. That the workshops have been well-received by participating teachers indicates that the professional development system has been effectively meeting teachers' self-reported needs. Table 4 summarizes the post-inservice ratings.

Table 4
Participant Evaluations for Mathematics FSP Workshops in 2000-01 (N= 58).
Rating Scale = 1: None/Not at All...5= Extremely/Fully

	Number of Sessions with a Mean Rating Between:		
Item:	Below 4.0	4.0 and 4.4	Above 4.4
Meeting content and design provided meaningful information/strategies	1	9	48
Presentations provided relevance to my needs for program implementation	1	13	44
Presentations provided info./strategies I will use	1	9	48
Overall quality of the session	0	8	50

Impact

The survey data collected from a representative sample of K-8th teachers during 4 years since 1996-97 describes some trend information regarding teacher opinions, practices, and professional development experiences that also helps to tell the professional development system story. The summary of findings below indicates the system's movement away from attention to investigative practices.

Survey area:	Trends
Teacher beliefs about the importance of inquiry-based instructional practices	Initial rises, then drops since 1997-98.
Teacher preparation to conduct inquiry-based instructional practices	Initial rises, then drops since 1997-98.
Teacher content proficiency for the grade level taught	Stable for most content strands, with steady increases in pre-algebra and algebra
Inquiry-based pedagogical strategies	Slight initial rises, then drops since 1997-98.
Skill-drill based pedagogical strategies	Stable, or rising since baseline.
Prof. Development has increased content knowledge	Decreasing since 1997-98.
Prof. Development has increased understanding of how children think about mathematics	Decreasing since 1997-98.
Prof. Development has increased ability to implement high-quality instructional materials	Decreasing since 1997-98. Preparation to teach pre-Algebra and Algebraic concepts has steadily risen since 1996.

While 2000-01 saw strong effects of State and local policies and practices which have seemingly unraveled some of the work of the 1995-2000 USI, a new thread began to emerge during the year that contained some of the elements of the original USI vision for instruction and for professional development. A group of schools (the API Alliance mentioned above) began examining grade- and school-wide weaknesses in particular areas of the SAT9 in an effort to increase scores for the State accountability system. Although driven by this narrow approach to improving achievement in a single or two skill areas, this set of schools and teachers, aided by mathematics FSP staff, began outlining the succession of conceptual steps needed for their students to meet the high performance benchmarks set by the state. From the outline, lessons were constructed that met the performance-conscious needs of site and central administration, yet paid careful homage to the conceptually-based progression of skills that formed the initial FSP vision in 1995.

Reflection/Feedback

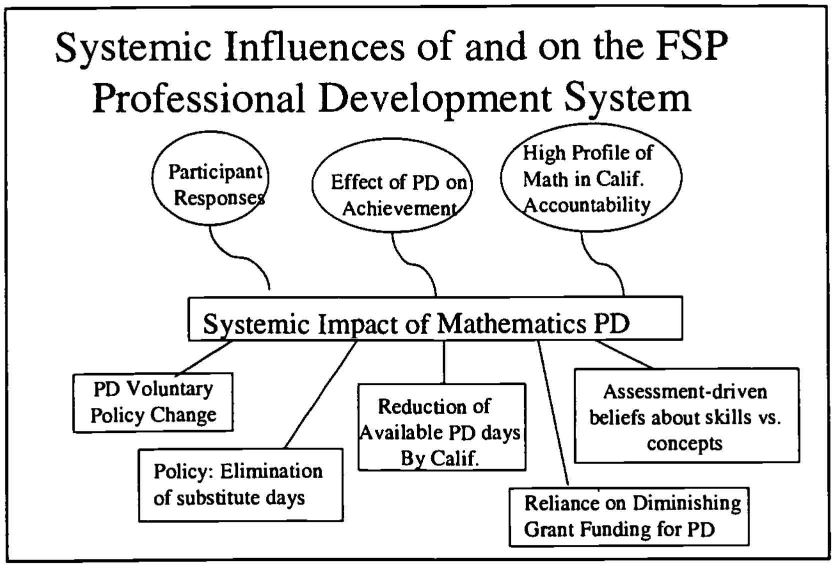
The FSP has implemented several activities to provide inservice presenters with opportunities to reflect on their experiences. Inservice-presenter teams conduct a debriefing after many sessions, discussing the post-workshop evaluations completed by participants and their own impressions of how the session was conducted. In addition, beginning in 2001-02, the FSP evaluator has begun conducting periodic focus groups with the mathematics professional development team to reflect on the program as a whole. Annual feedback from the teacher survey and classroom observations is also provided to the team from the evaluator.

Conclusion

The FSP has continued to develop and provide professional development that participants are finding valuable and relevant to their teaching needs. New offerings have focused on Algebra content and pedagogy for K-8th teachers, and also on providing university content coursework for groups of teachers. At the same time, many sources have conspired to reduce the impact of the mathematics professional development system in Fresno in 2000-01. The lessening impact is no surprise given these effects.

That the capacity-building efforts of the FSP from 1995-2000 would produce new efforts at accomplishing change has also been hypothesized; exactly where this would emerge in the tapestry has been unknown. The efforts of the API Alliance in 2000-01 and this year represent the first indications of this newly evolving effort.

Policy and practice changes, the California accountability system, and funding changes have produced effects that rippled through the system in many areas. Impact data demonstrates that the professional development system is engendering change in fewer teachers than in previous years. The graphic below illustrates how the professional development program has affected and been affected by other forces and elements found in the system. The elements above the Mathematics Professional Development (PD) box represent strands of the tapestry which have supported the life of the professional development system, while the elements below represent threads which have been acting to fray the tapestry. Data collected concerning some of the specific indicators follow.



Evaluator Involvement in Influencing the Process

The embedded research model posits research of systemic reform as an activity one conducts "with the district" rather than "on the district," (Webb, 2000). One of the key features of the FSP is the utilization of research personnel from the District's Office of Research, Evaluation & Assessment for the major portion of the evaluation of the project. By using an "internal evaluator," the embedding of the researcher in the system is a natural occurrence. From 1995-2000, the evaluation of the FSP primarily emphasized descriptive theory, using both qualitative and quantitative data collection methods to help describe and explain "what is." But through evaluation presentations, as a facilitator of data interpretation and reflection activities for the administrative staff in the district, and by simply 'being around' (Cronbach, Ambron, Dornbusch, Hess, Hornik, Phillips Walker & Weiner, 1980), the evaluator soon came to be seen by stakeholders as a member of the FSP leadership team as well.

With this presence and acceptance in the system came the opportunity and responsibility to offer input into the decision-making process. Internal evaluation during the second funding phase from NSF has enabled further evaluation activities from within, and allows access to information about decision-making that complements the survey, observation and achievement tools that were used previously (Webb, 2000). Data interpretation workshops for schools have grown as a function of the Research, Evaluation & Assessment office largely from the model initiated by the FSP evaluation.

An Example: The Use of Reflection Activities to Facilitate Learning

One example of the interactive use of evaluation findings to inform the project began in 1999, as the evaluation team discovered through observation of both professional development workshops and classroom lessons that participant/student reflection on learning experiences was occurring infrequently. The finding was discovered, analyzed and pondered over during an FSP data interpretation workshop with the leadership staff and professional development teams. By modeling the process of reflection, and by calling attention to its omission in workshops and in classrooms generally, new efforts were undertaken to help participants synthesize newly learned material through informal and formal reflection activities.

Building an infrastructure for teacher reflection on the learning experience for children, as well as on one's own teaching practices has also become a target for the FSP from 2000-05. Lead teachers have been established at many school sites, who can function as a peer coach for teachers working on improving their instructional strategies. Teachers can invite the lead teacher to observe a classroom lesson, then debrief after the lesson. One of the proposed features of the FSP is the development of an action-reflection, action research component of professional development. The separate infrastructure has been implemented sporadically however, with one summer institute course for mathematics teachers in 2001 attracting 10 teachers.

The Entire Tapestry: Changing Status of the System

Equipped with information from the professional development strand and the other major driving elements of the system, one can study the status of the system as a whole unit. A helpful model for describing the states of a reforming system has been developed by *Cosmos Corporation* (Yin, Noboa-Rios, Davis, Castillo and MacTurk, 2001). The model positions a series of driving reform elements as they move toward (and away from) alignment in the reform process. Fresno's study of each of the elements and their movement reveals a complex picture, influenced in part from changes at the state level. California's recently legislated elements, including the assessment and accountability system, content standards, narrowed curricular choices, and prepackaged professional development programs tied to grants, have all affected the reform-based alignment of elements in the Fresno system. As the series of California educational forces have become implemented or mandated, Fresno's driving elements have been affected, sometimes in a regressive movement away from previous alignment, and sometimes toward redefinition. The FSP has worked at the redefinition and realignment process, with the current picture of the tapestry revealing some well-bonded and coherent elements, and some fraying areas.

Final Thoughts

The systemic reform tapestry being woven in Fresno has encountered significant challenges and met with some important successes since 1995. While the kinds of instruments for evaluation have remained substantially the same over time, the role of the evaluator in describing this system has evolved. A descriptive-analytical approach based on the CIPP model has grown into an embedded research approach that includes understanding, describing and recommending from within. The model allows a "fit" with the FSP project, which is itself changing as the system encounters new resources and challenges. Some new evaluation activities have been introduced, such as focus groups. These key learnings have been guides in the study of the project in process:

- Evaluation design and tools must be flexible.
    - Immerse oneself in to the system in order to understand the complex interactions that make up decisions. Instruments can be better developed with this perspective.

    - Triangulate, triangulate, triangulate! Generally using multiple data sources to support conclusions has functioned to increase evaluator confidence in conclusions, and project staff confidence in the evaluator!
    - Using both quantitative and qualitative methods increases the chances of viably describing the project and progress.
    - Consider multiple units of analysis. NSF asked projects in 1998 to define the unit of change—most projects selected the school as the unit of change. However, the actual "unit of change" may be different from activity to activity and from day to day. The evaluator's units of analyses should include as many of these as possible: the student, the classroom, the school, and the entire project.
- Build a couple of close inspections of individual threads into the evaluation design.
- Develop a wide-angled lens to see the tapestry and describe how it is taking shape.

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